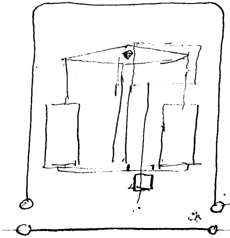
UNBOUND NOTES AND DRAWINGS
1898

1898

Cable Address "Edison, New York."

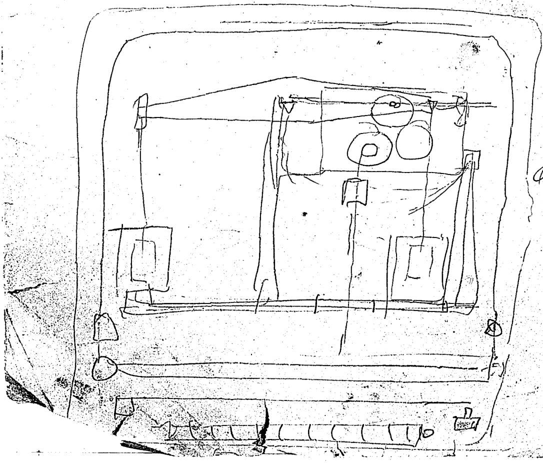
From the Laboratory
of
Thomas A. Edison.

Subject, ______ Orange, N.J., ______



April 19 98
J. F. Ott

Meter



April 1998

Edison N. J. June 1-1898

Mr Kellogg-

All right go ahead with Manganin. Please try how far Magnetic lines from eight foot Magnet can be made to effect minor galvanometer needle with amperes varying from one to as far as you can go with battery or lamp bank across light circuit

Tho A. Edison-

Telephone Message

Mr Edison:

Chemical action apparently occurs in the cells composed of Magnesium & Zinc Sulphate, causing bubbles of gas to form on the electrodes thereby changing the resistance and giving more than their share of current to the German silver shunt. The weights placed on the needles ~~[illegible]~~ depending from the middle of the balance arms just to accomplish the desired result of lengthening or shortening the time of trip of the retarding action of the weight going up the arc being exactly counterbalanced by the accelerating effect coming down and the net result will be the same wherever the weight is placed. Meters will have to be altered to give some means of calibration. Will investigate cell thoroughly for chemical action. Erratic action of meters yesterday last night and to-day bear out theory of chemical action

June 29. E. D. Kellogg

Telephoned 6/29-98
to Frank

Mr Kellogg - July 28/98

Crystals will not form with weak Current on Mercury Meter, better add resistance until it trips in couple of hours, what is changed or different about #6 Meter other than Carbonate Solution has it the guarded electrodes and excess of Cyanide

Edison -

Telephone message July 20th 1898

Kellogg Received at 6.40 P M

You did not answer my inquiry as to what the difference is on meter by nitrate the Carbonate solution tell me why it differs also I ~~[illegible]~~ stated in my last telegram that mercury would probably not crystallize if you added resistance to bring it to 4 or 5 mil amperes if there is a yellow salt ~~[illegible]~~ forms its due to want of nitric acid

Edison

July 28th

1	2	3	4	5	6	
4.08.00	2.44.00		4 58,00	3.15.00	4 56.30	6 00 — 17¼
11-58.00	8.03.00		6,48.00	9,53,30	6,14 00	6 10 - 17¼
416-3	10.46.00		8,33,30	2,18.00	7,32,00	6 20 — 17¼
	1.17 30		10,14,30	9.12	8,49.30	6 30 — 17.
	4,12,00		11,58,00	2.47-30	10,06 30	6 40 — 17.
	6-47-30		1 40,00		11-24-30	6 50 — 17
	9.12		3,26,00		12,41,00	7 00 — 17
	11.35-30		5.23..		2.01.00	7 10 — 17
	2-05.00		7.18.00		3.18 00	7 20 — 17
	4-45.00		9.02		4,35 00	7 30 — 17
			10-50.00		6 02 00	7 40 — 17
			12-25.00		7.09-00	7 50 — 17
			2-00-00		8.24	8 00 — 17 803-21
			3-56.10		9.43	8 10 — 18½ 804.20 805.19
					11.02-30	8 20 — 18 806.19 807.18½
					12.22.00	8 30 — 17¾
					1-45-00	8 40 — 17½
					2-56.30	8 50 — 17¼
					4-12.30	9.00 — 17¼
						9.10 — 17¼
						9 20 — 17¼
						9 30 — 17¼
						9 40 — 17¼
						9 50 — 17¼
						10 00 — 17¼
						10 — 17¼
						20 — 17¼
						30 — 17¼
						40 — 17¼ 1046.22
						50 — 18½
						11 00 — 1047.20
						10 — 18 1048.19
						20 — 17¾ 1049.18
						30 — 17½ 1050.18½
						40 — 17½
						50 — 17½
						17½

1	2	3	4	5	6	I	2	3	4
		Aug 15 579.5 Aug 16 580.5	766.0 aug 15 776.5	aug 16	11-45.00 1.48 3.35.00 5.47.00 563.0	2.03 1.47 2.12 21.54 22 mil-	9½ Amp, Aug 15	E.D.K.	
					567.5 8.58 11-20.00 1.45	ampere during #6 2.27 2.20		Aug 16.	
					shut down at 3.21				
		Restart at 6 P.M.							
		580.5 581.	766.5 766.5	30 3	569.0 572.0		10 ~~9.7~~ Amperes aug 16		
4-51-00	4-09.00	1-03.30	2.15.00	1	11-50.00 1-13.00 3.56.00	1.2 2.43		Aug 17	
394.5 395.0	754.0 755.5	581.5 582.0	767.0 767.0	[illegible]	573.5 576.5			9.2 Amp.	

1	2	3	4	5	6	Remarks
1.48-30	5-40-00	6-00	[illegible] 2.19	9.33.00 1-33-00 6.44	10.5-2 1-25.00 4-8-00	Aug 18
396.5 396.5	756.5 757.0	582.5 582.0	893.0 894.5	313.5 316.5	9.1 578.0 581.0	Aug 18 Aug 19
	9.15.00	[illegible]	10-35.00 3.49.00	1-47.00	11-00-00 1-46.00	

Kellog =

Use the suspended Mercury Electrodes - in 3 or 4 meters with Aluminum Beams -

get some Mercury from pump room, and put ~~enough for~~ ~~Each~~ it ~~in~~ shallow dishes of which there are some in Room 11 - Treat with 10% Solution of Nitric acid for Couple hours, stirring well then wash acid all out, Then ~~Set~~ Divide it in several portions, Each sufficient for one meter -

Then add ~~[illegible]~~ to 1 portion 25% of its weight of ~~the~~ sheet zinc we used in meter, cut in thin strips - & let it dissolve in Mercury ~~[illegible]~~ it may not all dissolve But that dosent matter =

Set this meter up with strong Sulphate of Zinc ~~[illegible]~~ say 50% Sol =

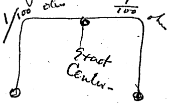
---

another portion used Cadmium in strips & Cadmium Sulphate -

another portion use Silver & strong Cyanide Silver in excess of Cy Potassium -

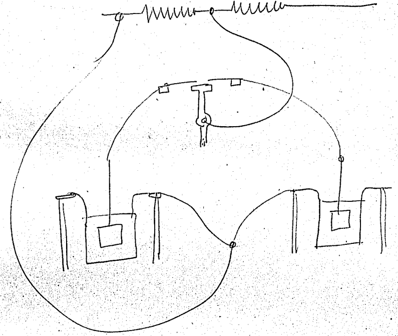
Make up one meter with
Nitrate Mercury & mercury
alone = Freddy has the
Nitrate Mercury Solution —
It should be filtered =

Make 6 shunts of the size
given by Fred Ott to be
put in the Meter —
Make them of platinoid
if that proves all right —



Give as much radiating surface
as possible —
If the surface is insufficient.
We might make 2 strips putting
~~them~~ 1/4 inch apart thus
giving Ventilation —

Kellogg – Set up one of the regular Zinc Electrode meters with
Sulphate of Zinc same as originally set up but so connected
that ~~ither~~ cells are not in series & the Current is not
reversed. Use only one shunt so that when lever goes to
one side one cell is in & the other disconnected & when
it goes to other side the idle cell is thrown in & the other
out & pass the Current so it will plate off of the suspended
Electrode in both cells –

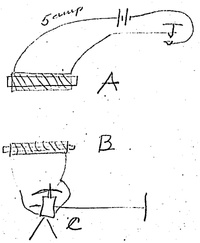


By this means the record will be made entirely
by removing Zinc & we shall get rid of the Hydrogen
effect & also bad plating – as neither will interfere –
If we use 20 milampers 3 or 4 hours each day
a couple of oz of Zinc on each electrode would
last 2 years or more =

Kellog -

It has occurred to me that if we make a saturated solution of Cyanide of Silver & Cyanide of potassium - ~~[illegible]~~ with smallest quantity of water - that the solution will no longer be able to get more dense at the bottom as it will be as dense as possible all over - You could get this by making a saturated solution of Potassium Cyanide & then add Silver Cyanide until it would take up no more = then add a very little water so as to

~~[illegible]~~ dissolve some fresh potassium
Cyanide so as to have an Excess
you might even leave some extra
pieces of undissolved Cyanide in
bottom of Cell —



A is a bar of iron 1 foot long one inch diameter covered with paper to insulate it & then wound with one layer of No 14 15 ~~a~~ 16 or 17 BWG cotton covered wire. The end turn is tied by a string to the last 3 turns —

~~B~~ a key & storage Battery gives 5 amperes

B is the same as A except the wire is finer the resistance of the wire of which there may be one or more layers is equal to the Mirror galvanometer employed. of which I think we have one of 1/2 ohm or less —

Now place the 2 magnets parallel to each other 1 ft apart & take the throw of the galvanometer on ~~closing~~ opening the ~~[illegible]~~ Battery

Circuit, raise the deflecting magnet so as to make it as sensitive as possible to the full Extent of the Scale = take several readings

Now move the ~~g~~ second magnet 2 feet away from the ~~prim~~ battery magnet + take another reading - + then proceed one foot at a time until the galvanometer no longer gives any throw

or indication of an inductive Current,

Now make a second magnet both for the battery + the galvanometer the battery magnet wound to give the same ampere Turns as A ~~the~~ of the 1st Experiment, + the galvanometer wound over its Entire length to give the same ~~[illegible]~~ Resistance as the galvanometer — but both magnets to be Two feet long each

Then place them one foot ~~appo~~ apart + take readings receeding from the battery magnet one foot at a time — until you can no longer get readings on the galvanometer — as the throw will be greater on the 2 foot magnet than the one foot when you take the 1st reading

you may have to move the galv magnet several feet away to get the first reading

Now continue experiments with magnets, 4 + 8 feet long =

If galvanometer room is not long enough put one magnet in galv room the other in one of the other bldgs.

Freddy Ott will cut the iron off for you & rig up lathe to wind the short magnets, the longest may have to be wound by hand without he can get it in Lathe, be sure the wire does not cross with the core. If we have no one

~~Which [illegible] the exper~~ ~~will [illegible] you~~ ~~[illegible]~~

inch iron use 5/8 or 3/4 or 1 1/4 — if none of these Tell Devenald in the

Store room to send right over to Newark & get the right amount of Norway or other soft iron (Norway preferred) Coe of Newark keeps it

Edison

~~Hhe~~

Mercuric Nitrate —

~~Concentrated solution~~

get Merck 10.3

28c oz —

Mercury —

in water with 3% of
Nitric acid, agitate it
with glass rod for 1/2 hour
then wash out solution by
holding under hydrant stirring
the Mercury then - distilled water
mercury then OK

2 lbs absolutely pure stick Zinc - Listed in Catalogue at 1.50 per lb-

~~18 oz~~ 1/2 lb Chloride Zinc Mercks guaranteed Reagent

1/2 lb Nickel + Ammonium Chloride -

1/2 lb Nickel + Ammonium Sulphate -

6 oz Carbonate Zinc pure

[CA. JULY-AUGUST 1898]

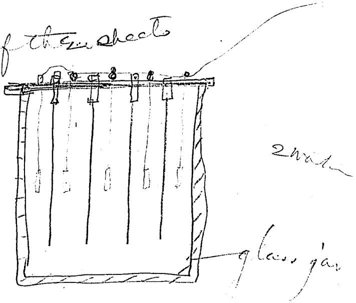
Kellogg

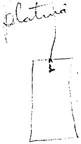
I think the reason of the high resistance is due to the Resistance of the Column of liquid itself no amount of Extra surface will diminish the resistance, the only advantage Extra surface will give is that the deposit per square inch will be slower & more uniform— and less likely to exhaust liquid of the Silver ~~at~~ any unit surface—

You can easily determine if it is the specific resistance of the liquid by measuring the resistance every time you separate the Electrodes ~~at~~ a certain distance apart, You should set up an extra cell with the new solution and get its ~~to~~ variation of resistance by rise & fall of temperature to ascertain if it will be necessary to Employ much Compensating resistance ~~[illegible]~~ simple disk Electrodes perforated like you have in one of the meters & with platina wire Can be used to make determination also while you are at the Curve you might run liquid down to 20 above Zero or even lower to ascertain if the solution crystalizes. John Ott said he would give you a night man so I hope you are getting results.

Edna

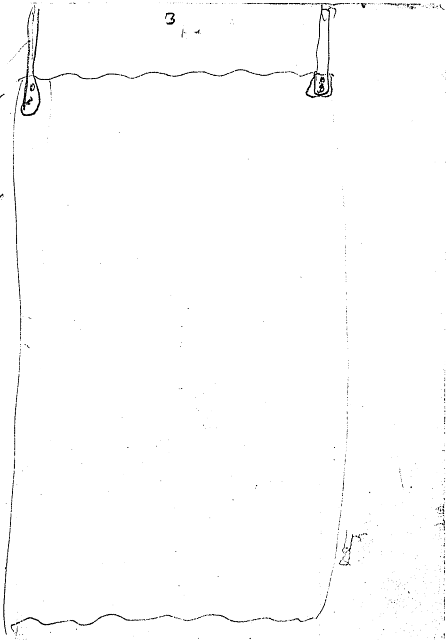
Want 4 of these sheets


2 water
glass jar


platina
actual size.

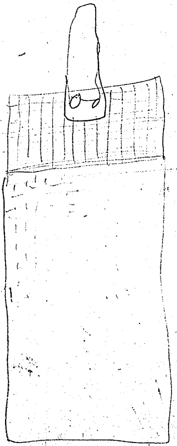
hang to say 10/1000 platina wire -

all the platinas are connected together + all the nickel sheets are connected together -

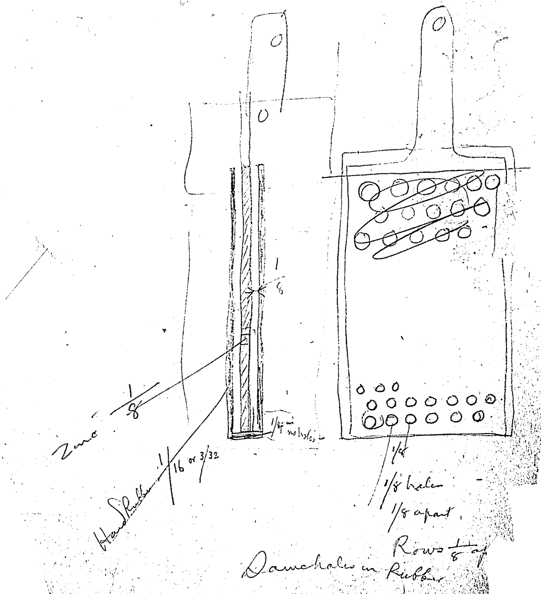


Make these long & of nickel –

If Phillips finds that one jar of 4 plates are not enough make another set for another jar —



1/8 thick Black Oxide -
Screen of Copper
gauze in center
mould


1/8
Zinc 1/8
Hard Rubber 1/16 or 3/32
1/4 in no holes
1/8
1/8 holes
1/8 apart
Rows 1/8 ap
Dam holes in Rubber